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TECHNICAL NOTE

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RELATING OUTSIDE- TO INSIDE-BARK DIAMETER AT TOP OF FIRST 16-FOOT LOG FOR SOUTHEAST ALASKA TIMBER

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Estimates of gross volume, obtained from form class volume tables, are complicated by the difficulty of obtaining inside bark diameter at the top of the first log for calculating form class. Inside bark diameter is usually determined by climbing the tree, measuring windthrows or trees felled in logging, by using pole calipers, or by outright estimation. These methods are either time-consuming, inaccurate, or physically difficult.

Procedures for obtaining outside bark diameter at the top of the first log were devised recently by applying the Bitterlich principle.[1/] Angle gauges or the "Relaskop" have proven both easy to use and accurate. Only the problem of converting outside bark to inside bark diameter remains.

Measurements of 583 trees were used to calculate factors relating outside bark diameter to inside bark diameter at the top of the first 16-foot log for four southeast Alaska timber species. Table 1 lists the factors and information about the trees from which they were determined.

1/ Bureau of Land Management. Form Class. [A mimeographed manual separate, section III-B] Oregon State Office, Bur. of Land Management. 43 pp. 1959.

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Table 1.--Factors for converting outside- to inside-bark diameter at top of the first 16-foot log for southeast Alaska.

Factor	Species	Standard error	Sample Trees		
			Number	D.o.b.--top of 1st 16-ft. log	
				Average	Range
				Inches	Inches
.9266	Western hemlock	.0015	197	21.84	10.3-43.6
.9472	Sitka spruce	.0025	192	23.02	9.7-50.6
.9539	Alaska-cedar	.0019	102	11.41	4.5-27.9
.9396	Western redcedar	.0028	92	20.45	4.1-44.6

An accurate estimate of inside bark diameter at the top of the first 16-foot log is obtained by optically estimating outside bark diameter and multiplying the estimate by the appropriate factor.

Volume tables are available[2/] relating gross board-foot volume to inside bark diameter at 16- and 32-foot log heights. Sitka spruce volume tables are also available[3/] relating gross cubic- and board-foot volume to inside bark diameter 18 feet above the root collar. All of the above tables are easily adapted to the use of optical instruments.

2/ U. S. Forest Service. Guides for variable plot cruising in Region 6. [A mimeographed manual separate] Region 6, U. S. Forest Service, 28 pp., 10 p. appendix. 1958.

3/ Johnson, F. A. Volume tables for Pacific Northwest trees (A compilation). U. S. Dept. Agr. Handbook No. 92, 6 pp., 122 tables, 1 p. appendix. 1955.

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